

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2003P05953WO	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/EP2004/004783	International filing date (day/month/year) 05.05.2004	Priority date (day/month/year) 11.07.2003
International Patent Classification (IPC) or national classification and IPC H02H6/00		
Applicant SIEMENS AKTIENGESELLSCHAFT		

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2.	This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.	
3.	This report is also accompanied by ANNEXES, comprising: a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>6</u> sheets, as follows: <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4.	This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application	

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/004783

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:

- ☐ international search (Rule 12.3 and 23.1(b))
☐ publication of the international application (Rule 12.4)
☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

☐ the international application as originally filed/furnished

☒ the description:

pages 1, 2, 5-9 as originally filed/furnished

pages* 3, 3a, 4 received by this Authority on 03.02.2005 with letter of 28.01.2005

pages* _____ received by this Authority on _____

☒ the claims:

nos. _____ as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* 1-12 received by this Authority on 03.02.2005 with letter of 28.01.2005

nos.* _____ received by this Authority on _____

☒ the drawings:

sheets 1/2-2/2 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/004783

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-12</u>	YES
	Claims _____	NO
Inventive step (IS)	Claims <u>1-12</u>	YES
	Claims _____	NO
Industrial applicability (IA)	Claims <u>1-12</u>	YES
	Claims _____	NO

2. Citations and explanations (Rule 70.7)

1. Reference is made to the following documents:

D1: EP-A-0 999 629 (ABB RESEARCH LTD), 10 May 2000
(2000-05-10)

D2: US-B1-6 424 266 (COISH ROBERT GEORGE ET AL),
23 July 2002 (2002-07-23)

D3: US-A-4 467 260 (MALLICK JR GEORGE T ET AL),
21 August 1984 (1984-08-21)

2. Independent claim 1

2.1 Document D1 is considered to be the prior art closest to the subject matter of claim 1 in the present application. Claim 1 in D1 discloses (the references in parentheses are to D1) a device for protecting an electrical machine against current overload (see page 6, line 43), comprising:

- a current value provider for providing an instantaneous value for the current in the electrical machine (see page 6, lines 44 to 48; "acquisition and processing means").

2.2 The subject matter of claim 1 in the present application

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/004783

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

differs from the known protection device in that it specifies the following:

- a prediction device for establishing a thermal motor model on the basis of the instantaneous current value, a specified current limit value and a time determined by the classification of the electrical machine, and for predicting an absolute or relative time value for a triggering reserve at which the thermal motor model reaches a value of 1, and
- an analysis device for analysing the time value for the triggering reserve in order to generate a control signal.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

2.3 The problem addressed by the present invention can thus be seen as that of providing a simple way to determine a switch-off time.

2.4 The solution proposed in claim 1 of the application involves an inventive step (PCT Article 33(3)) for the following reasons:

The calculation of the thermal state equations in document D1 does not involve establishing a thermal motor model. Document D2 makes no mention of a "thermal motor model" as a thermodynamic variable. Document D3 discloses an motor starter in which the rotor temperature is shown exponentially. The rotor temperature is different from the thermal motor model.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/004783

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Thus there is nothing in D1, D2 or D3 that would suggest the solution according to claim 1.

- 2.5 The phrase "time determined by the classification of the electrical machine" in claim 1 is vague and unclear, and leaves the reader in doubt as to the meaning of the technical feature referred to. The subject matter of the claim is therefore not clearly defined (PCT Article 6).

3. Independent claim 7

The observations made in connection with device claim 1 also apply to method claim 7. The subject matter of claim 9 can therefore also be considered novel and inventive.

4. Dependent claims 2-6 and 8-12

Claims 2 to 6 and 8 to 12 are dependent on claims 1 and 7 and therefore also meet the PCT requirements in respect of novelty and inventive step.